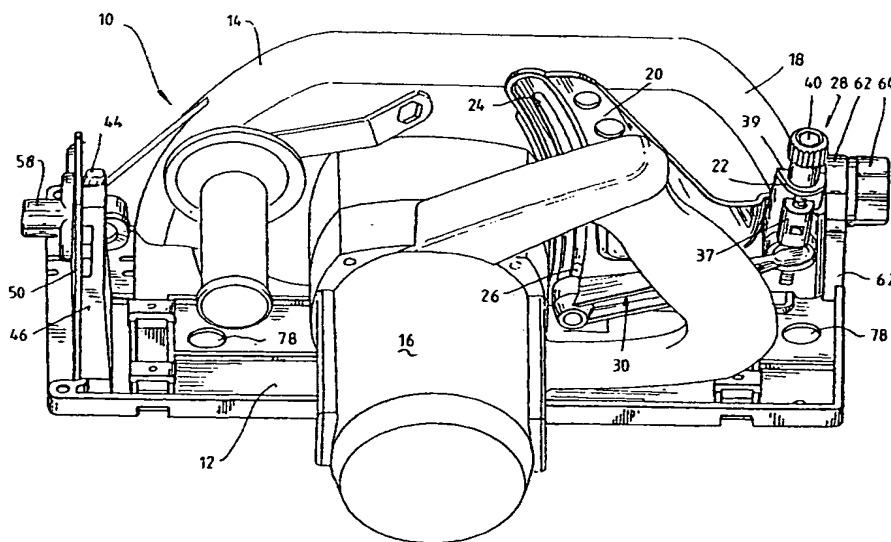




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(54) Title: ADJUSTMENT MECHANISM FOR A SAW



(57) Abstract

A circular saw including a frame, a drive means mounted to the frame coupled to a planar saw blade for rotation about a drive axis within a cutting plane and a base pivotably mounted to the frame about a first axis substantially parallel to the cutting plane and a second axis which is generally substantially parallel to the drive axis. In one aspect, the relative pivotal movement of the frame about the first axis is determined by a trim adjuster including a disengageable position locator which is operable to provide a plurality of predetermined discrete engaged positions and a locking means for locking the position of the frame relative to the base over a continuous range of settings. The invention also provides a mounting assembly including a course adjustment means and a fine adjustment means to determine the pivotal movement of the frame about the second axis relative to the base.

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ADJUSTMENT MECHANISM FOR A SAW

Field of the Invention

This invention relates to improvements in the mounting and alignment of saws and is particularly applicable to circular saws used for cutting a workpiece.

5 Background of the Invention

In order to guide a saw blade rotating about a drive axis, the drive for the saw blade is usually mounted to a frame having a blade guard. A reference for the cutting plane of the rotating saw blade is provided by a base plate affixed to the frame through which the saw blade projects. The base plate which usually
10 slides on its flat surface across a workpiece defines the angle of the cutting plane to the workpiece by the relative position of the cutting blade to the base plate. Hence the angle of the cutting blade is best varied by changing the angle of the cutting plane relative to the base plate. This generally occurs by pivoting the cutting plane about an axis parallel to that plane.

15 The depth of the cut from the cutting blade is determined by the distance below the base plate through which the blade extends. This depth is adjusted by altering the position of the base plate relative to the frame. The most common form of adjustment is simply by pivoting the frame about an axis on the base plate parallel to the drive axis of the cutting blade, thereby, in effect raising or
20 lowering the blade relative to the base plate.

In the case of most circular saws, the adjustment mechanisms which allow adjustment of the angle of the cutting blade provide for only coarse adjustment. Consequently, precise cutting and fine adjustment of the angle and depth of a cut is difficult.

25 Summary of the Invention

It is an object of the present invention to provide a circular saw which overcomes at least one of the adjustment problems outlined above.

Accordingly, the invention is applicable to a saw including a frame, a drive means mounted to the frame coupled to a planar saw blade for rotation
30 about a drive axis within a cutting plane and a base pivotally mounted to the frame about a first axis substantially parallel to the cutting plane and a second

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axis which is generally substantially parallel to the drive axis. Conventionally the first axis corresponds with the longitudinal axis of the saw and the second axis corresponds with the transverse axis.

In a first aspect of the invention, the pivotal movement of the frame
5 about the second pivotal axis is determined by a mounting assembly, the mounting assembly providing a means of course adjustment of the position of the base relative to the frame and a means of fine adjustment of the position of the base relative to the frame. The mounting assembly may include a sliding height bracket and adjustably engaging the frame to provide course adjustment
10 of the base relative to the frame and an attachment bracket engaging the frame and adjustably engaging the sliding height bracket to provide fine adjustment of the base relative to the frame. To provide fine adjustment of the position of the base relative to the frame, the attachment bracket of the mounting assembly adjustably engages the sliding height bracket. Adjustment of the position of the
15 sliding height bracket relative to the attachment bracket by a fine adjustment mechanism provides fine adjustment of the position of the base relative to the frame.

The applicants have found that by providing a fine adjustment means and a course adjustment means, the depth of saw blade extending below the base
20 plate can be accurately and precisely controlled. The frame is effectively pivotally mounted to the base preferably about pivot mounting which is preferably a forward pivot point and adjustably connected to the base plate at the attachment bracket through the sliding height bracket.

The frame is preferably provided with a protrusion which is slideably
25 received within a slot in the sliding height bracket. A releaseable locking means co-operates with the protrusion to secure the position of the sliding height bracket relative to the frame. It is preferred that the sliding height bracket is further provided with an engagement stud being slidably received and preferably extending through a guide or slot in the attachment bracket. The
30 position of the stud within the guide of the attachment bracket may be defined by the fine adjustment mechanism. The adjustment mechanism may include a

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locating rod secured at one end to the engagement stud or bolt of the sliding height bracket, the locating rod preferably being provided with a screw thread. The locating rod preferably extends through a flange on the attachment bracket and is held in position by a threaded adjustment knob which abuts against the
5 flange. The position of the sliding height bracket relative to the attachment bracket is thus adjusted by rotation of the threaded adjustment knob which varies the extension of the locating rod through the flange on the attachment bracket.

In a second preferred aspect of the invention, there is provided a saw
10 including a frame, a drive means mounted to the frame coupled to a planar saw blade for rotation about a drive axis within a cutting plane and a base pivotally mounted to the frame about a first axis substantially parallel to the cutting plane and a second axis which is generally substantially parallel to the drive axis, wherein the pivotal movement of the frame about the second pivotal axis is
15 determined by a mounting assembly, the mounting assembly providing a means of course adjustment of the position of the base relative to the frame and a means of fine adjustment of the position of the base relative to the frame.

The provision of a position locator allows the trim of the rotating saw blade as determined by the angle of the base plate relative to the frame to be set
20 in one of a number predetermined discrete settings when the locator is engaged. By providing a disengaging function on the discrete position locator, the angle of the base plate relative to the frame can alternatively be set at any angle over a continuous range of angles by the locking means when the locator is disengaged.

25 The first pivot axis of the frame about the base is defined by a first pivot mounting on the frame and the second pivot mounting on the base, the pivotal angle being set by the trim adjuster. The position locator of the trim adjuster includes a pawl housing and a slotted cover plate, the pawl housing preferably secured to the base plate and the slotted cover plate to the front pivot bracket of
30 the frame. The slot in the cover plate may be provided with a plurality of

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notches for receiving a pawl pivotable within the pawl housing between an engaged and a disengaged position.

To adjust and set a predetermined angle of the base plate relative to the cutting plane, the pawl is disengaged and the cover plate rotated relative to the housing. When the desired preset angle between the base plate and frame is reached, the pawl engages the corresponding preset notch in the cover plate.

The engagement of the pawl with the preset notch in the cover plate holds the base plate and the frame in position. The position may be further secured by engaging the locking means having a locking device such as a screw threaded knob or clamp which co-operates with a bolt extending through the slot in the cover plate.

If it is desirable to set the angle between the base plate and the frame at an angle which is not preset as a notch in the coverplate, then the pawl can remain disengaged and the locking means only engaged once the desired angle has been set.

In both cases whether the pawl is engaged or not, a further locking means on the second pivot mounting may be engaged once the angle between the base plate and the frame is set and the forward locking means is secured.

Since the alignment and angle of the frame corresponds with the alignment and angle of the cutting blade, adjustment of the angle of the frame relative to the base plate produces an identical corresponding adjustment of the angle of the cutting blade and cutting plane relative to the base plate. The first pivot mounting is secured to the frame and pivotally mounted to the base plate. The cover plate may be mounted to the first pivot mounting by a fine trim device for limited rotation of the cover plate relative to the first pivot mounting.

When the cover plate is secured to the pawl housing either by the engagement of the pawl or the tightening of the locking means, small changes of angle can be effected. Thus small angle variations either side of the preset angles determined by the engagement of the pawl in the notches of the slot of the cover plate may be effected.

The limited pivotal movement of the coverplate relative to the first pivot mounting also enables correction of the pre-set positions of the notches relative to the pawl housing. This limited pivotal movement permits correction of any errors between the indicated angle corresponding to the engagement of the pawl in a notch and the actual angle.

Fine adjustment of the trim angle, ie. the angle of the base plate to the cutting plane is preferably provided by a fine trim device mounted to the first pivot mounting having an eccentrically mounted cam which engages a passage in the cover plate. Rotation of the fine trim device causes limited rotation of the cover plate relative to the first pivot mounting, thereby either varying the position of the cover plate relative to the pawl housing when the pawl is disengaged and the locking means is disengaged, or providing a small variation in the angle between the base plate and the frame when either or both the pawl and the locking means is engaged. In this way, when the pawl is engaged in a notch corresponding to a trim angle of 90°, angles greater than 90° can be obtained by adjustment of the securement device.

This aspect of the invention enables the angle of the base plate relative to the cutting plane to be accurately and positively set. The fine adjustment by limited rotation of the cover plate relative to the first pivot mounting further provides a means to adjust the position of the cover plate and hence the notches relative to the pawl housing and pawl to correct for errors between the actual angle and the angle indicated by the engagement of the pawl in a given notch.

The invention also provides a circular saw having the height adjustment mechanism of the first aspect of the invention and the trim adjustment mechanism of the second aspect of the invention.

Another aspect of the invention relates to positioning a circular saw or other such article beneath a fixture such as a work bench. The preferred use is with a circular saw which is mounted beneath a saw bench with the rotating circular blade extending through a gap or slot in the bench, although this aspect of the invention could equally be applied to mounting any article to a fixture where precise positioning is required.

When used for mounting a circular saw beneath a bench, the blade of the saw extends above the table acting a rip saw for cutting workpieces on the top surface of the work bench. One problem with easily demountable circular saws used in this way has always been precise positioning the rotating cutting blade
5 with respect to the positional fittings on top of the saw bench. The correct positioning is necessary to ensure that the rotating cutting blade is correctly aligned with the direction of any intended cut. This is necessary if only the leading teeth of the saw are to be cutting the workpiece thus providing an unblemished cut.

10 However, mountings for circular saws and the like articles below work benches generally do not allow precise manoeuvring of the saw within the mountings under the bench. In most cases, the person mounting the saw will not be able to precisely align the blade and therefore will be forced to settle for a very small degree of mis-alignment and the resulting less-than-perfect cut.

15 Accordingly, in this aspect of the invention relates to a positioning assembly for use with the mountings of an article such as a circular saw to a fixture such as a work bench. The assembly includes a plug to be received within an opening in the base of the article, the plug having an adjustment head such as a nut having an axis aligned eccentrically through the plug. The
20 assembly also includes a foot to be received within the mounting on the fixture, the foot engaging the plug through the axis of the adjustable head. The adjustable head is preferably rotatable relative to the foot about the axis of the adjustable head. A shaft preferably extends through the axis of the adjustable head engaging with the foot.

25 The foot of the positioning assembly in accordance with this aspect of the invention is held in place on the fixture such as a work bench and the base plate of the article such as a circular saw is placed against the fixture with the adjustable head engaging the base plate.

The adjustable head rotated about its axis, due to the eccentric
30 positioning of the axis relative to the adjustable head, alters the alignment of the base plate relative to the mounting bracket of the fixture.

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The base plate of the circular saw is preferably provided with two positioning assemblies according to this aspect of the invention. The openings in the base plate for receiving the positioning assemblies are preferably positioned towards the front and rear of the base plate, thereby increasing the possible adjustment to the alignment of the base plate relative to the fixture mountings. This provides adjustment of the alignment of the rotating blade which may extend through a slot or recess in the work bench.

The features, objects and advantages of the present will become more apparent from the following description of the preferred embodiment and accompanying drawings, in which:-

Figure 1 is a top perspective of a circular saw in accordance with the first and second aspects of the invention;

Figure 2 is a perspective view of the rear of the saw of Figure 1;

Figure 3 is a perspective view of the forward height adjustment bracket shown in Figure 2;

Figure 4(a) is a perspective view of the attachment bracket of Figure 2;

Figure 4(b) is a view of the device used to engage the front height bracket with the attachment bracket;

Figure 5 is a perspective view of the front of the saw of Figure 1;

Figure 6 is an exploded view of the trim adjuster shown in Figure 5;

Figure 7 is an exploded view of the positioning assembly in accordance with the third aspect of the invention;

Figure 8 is a perspective view of the base plate of the saw of Figure 1.

Figure 9(a) is a front perspective view of the fine trim device, and

Figure 9(b) is a rear perspective view of the fine trim device.

Referring to Figure 1, a circular saw 10 illustrating the first and second aspects of the invention is shown. The saw includes a base plate 12 pivotally connected to a frame 14. A drive means 16 coupled to a planar saw blade (not shown) for rotation within a cutting plane is mounted to frame 14 which generally carries a guard 18 to protect the user of the saw from the rotating saw blade.

Circular saws are often provided with the ability to pivot the base about a first axis parallel to the plane of the rotating saw blade to adjust the trim of the saw and also a means to pivotally adjust the base relative to the frame about a second axis which is parallel with the drive axis of the drive means.

5 According to the first aspect of the invention, pivotal movement of the frame 14 about second pivot axis which is parallel to the drive axis is determined by a mounting assembly. The mounting assembly provides a means for course adjustment of the position of the base 12 relative to the frame 14 and the means of fine adjustment of the position of the base 12 relative to the frame
10 14. The mounting assembly includes a sliding height bracket 20 and an attachment bracket 22. The sliding height bracket is provided with a slot 24 which slideably engages with a protrusion 26 in the frame. The slot 24 is generally in the shape of an arc with the centre of the arc being the second pivot axis.

15 The sliding height bracket 20 is connected to the base plate 12 through the attachment bracket 22. The position of the sliding height bracket 20 relative to the attachment bracket 22 may be fixed by an adjustment mechanism 28 between the sliding height bracket 20 and the attachment bracket 22.

 The course height adjustment is carried out by allowing the protrusion 26
20 from the frame to slide within the sliding height bracket 20 until the distance which the cutting blade protrudes from the base plate 12 is at a desired measurement. The relative positions of the sliding height bracket 20 and the protrusion 26 are then secured by a locking lever 30 which preferably has a screw thread which tightens on the protrusion and locks the sliding height
25 bracket 20 and protrusion 26 in position.

 Further fine adjustment of the distance of the cutting blade protruding through the base plate is then effected by adjustment mechanism 28. Referring to Figures 3, 4(a) and 4(b), the attachment bracket 22 is provided with a flanged region 31 which extends towards and overlaps with a region 29 on the sliding
30 height bracket 20. The flanged region 31 is provided with at least one guide or slot 33 for engaging with corresponding studs 34 on the sliding height bracket.

The studs are able to slide within a limited range within the guides or slots 33 with the guides or slots being formed in an arcuate shape, the centre of the arc being the second pivot axis. Hence the centre of the arc of the guides on the attachment bracket is preferably the same as the centre of the arc of the slot in the sliding height bracket.

An engagement stud or bolt (not shown), fixed in position relative to the sliding height bracket extends through the sliding height bracket 20 and slot 36 in the flanged region 31 of the attachment bracket 22 to engage a slider 37. The position of the slider 37 relative to the attachment bracket 22 is determined by an extension rod 38 which extends through a second flange 39 in the attachment bracket 22 and is held in position by an adjustment knob 40. By turning the adjustment knob 40, the position of the slider 37 and hence the position of the sliding height bracket relative to the attachment bracket can be adjusted in small increments over a limited range of movement. Thus, turning of the adjustment knob 40 is able to provide small incremental and precise changes to the height of the cutting blade through the base 12.

By a combination of the course adjustment through the adjustment of the sliding height bracket 20 and the fine adjustment provided by the rear adjustment knob 40, the height of the cutting blade extending through the base plate can be precisely set.

The trim angle of the cutting blade about the first pivot axis which is determined by the angle of the base plate 12 relative to the frame 14 may be adjusted in accordance with a second aspect of the invention. The first pivot axis of the frame about the base is determined by a first pivot mounting 42 and the second pivot bracket 22 which is preferably part of the mounting assembly. In the preferred form the first pivot mounting indirectly attaches the frame to the base towards the front of the apparatus and the second pivot mounting indirectly attaches the base to the frame towards the rear of the apparatus. The pivot angle is set by a trim adjuster which includes a disengageable position locator and a locking means. The disengageable position locator includes a pawl 44 received within a pawl housing 46 secured to the base plate 12. A cover plate 50 for the

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pawl housing is mounted preferably capable of limited pivotal movement to first pivot mounting 42 of the frame. When the pawl is moved into the engaged position, detent 48 of pawl 44 is received within a slot 52 in the cover plate 50. The pawl 44 is biased by a means such as a spring 56 so that when the pawl is in the engaged position, detent 48 will engage with notches 54 provided in the slot 52. Notches 54 are positioned on the slot 52 to correspond with predetermined trim positions (such as say 15°, 30°, 45°) between the base plate and the frame.

When the pawl is in the engaged position, the position of the base plate 12 relative to the frame will be perfectly set by the detent being received within a notch 54 of the slot 52. To ensure that the trim angle is maintained at the set value, an additional locking means is preferably provided. The locking means includes a screw threaded stud, or bolt secured to the pawl housing and extending through the slot 52 to engage with a screw threaded knob 58. A further locking means is preferably provided on the attachment bracket 22 which in turn is provided with an arcuate slot 60. A bolt extends through arcuate slot 60 in the attachment bracket 22 and a fixture 62 in the base plate 12 and is held in position by screw threaded knob 64.

The position of the cover plate on the first pivot mounting 42 may be adjusted through a limited range of rotation by a fine trim device 75 which is preferably the uppermost attachment of two attachment points between the cover plate 50 and the first pivot mounting 42. The limited pivotal movement of the cover plate 50 relative to the first pivot mounting 42 enables correction of the pre-set positions of the notches relative to the trim housing. One benefit of this limited pivotal movement is the ability to correct errors between the indicated angle corresponding to the engagement of the pawl in a notch and the actual angle. The fine trim device 66 preferably includes an adjustment lever 75 having a cam 77 which is received within an aperture 73 in the cover plate 50. The cam 77 has a stud 79 eccentrically mounted to the cam for securement to the upper attachment point of the forward pivot mounting 42. Due to the eccentric axis through the cam rotation of the cam causes limited rotational displacement of the cover plate 50 relative to the forward pivot mounting 42.

Another benefit of the fine trim adjustment can be seen once the position of the cover plate is secured relative to the pawl housing 46 by the locking means. Rotation of the cam provides rotation of the cover plate relative to the first pivot mounting 42 thereby provides a fine adjustment to the trim of the
5 base plate 12 relative to the frame 14. Hence, the provision of the fine trim device 75 enables the trim angle to be adjusted by up to + or - 1° of any of the predetermined settings without re-adjusting the locking knob 58.

Furthermore, when the course trim adjustment by the pawl or locking means 58 is set to 90°, adjustment of the fine trim device 75 will enable the trim
10 angle between the base plate and frame or cutting blade to be adjusted beyond 90°. Adjustment of the trim angle beyond 90° on most other circular saws has generally not been possible.

If angles other than those predetermined by the position of the notches 54 in slots 52 are required, pawl may be moved to its disengaged position so that
15 the detent 48 does not engage slot 52 and the trim angle moved to the required value and locked into position by the locking knob 58 and knob 64 on the attachment bracket. Tightening of the tightening knob 58 and rear knob 64 is considered sufficient to maintain the trim angle at the set value.

A third aspect of the invention relates to the positioning of articles such
20 as circular saws to a fixture such as a work bench. While this aspect of the invention is described with regard to suspending a circular saw beneath a work bench, it would be readily apparent to a person skilled in the art that this aspect of the invention may be applied the precise positioning of any article on a fixture.

25 Referring to the embodiment of this aspect of the invention, a positioning assembly 70 is shown in Figure 7. The positioning assembly 70 includes a plug body 72 which is dimensioned to fit tightly within a recess in the article.

The plug body is provided with an adjustment head 74 such as a hexagonal nut having an axis aligned eccentrically through the plug body 72.
30 The positioning assembly includes a foot 80 which is shaped to be received within the mounting of the fixture. The foot 80 engages the plug body 72

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through the axis of the adjustable head 74. The engagement is provided by a shaft 76 which extends through the adjustable head 74 and plug body 72 along the axis of the adjustable head 74 to the foot 80.

5 To illustrate the use of the third aspect of the invention with a circular saw as provided in the first or second aspect of the invention, base plate 12 is provided with apertures 78 which are dimensioned to tightly receive plug bodies 70. Two feet 76 engage the underside of a work bench and are held in position by suitable means.

10 It is preferable to provide a positioning assembly at each end of the base plate 12 and fitted to their respective mountings so that the cutting blade which extends through the base plate and an opening in the saw bench is approximately in an aligned position. Rotation of the hexagonal nut by the appropriate tool causes minor adjustment of the base plate relative to the work bench mountings as a result of the rotation about the eccentric axis of the plug
15 bodies 72 thereby providing a fine adjustment of the base plate of the article such as a circular saw relative to the mountings on the fixture such as a work bench.

Claims

1. A saw including a frame, a drive means mounted to the frame coupled to a planar saw blade for rotation about a drive axis within a cutting plane and a
5 base pivotally mounted to the frame about a first axis substantially parallel to the cutting plane and a second axis which is generally substantially parallel to the drive axis, wherein the pivotal movement of the frame about the second pivotal axis is determined by a mounting assembly, the mounting assembly providing a means of course adjustment of the position of the base relative to
10 the frame and a means of fine adjustment of the position of the base relative to the frame.
2. The saw of claim 1 wherein the mounting assembly includes a sliding height bracket and an attachment bracket, the sliding height bracket adjustably
15 engaging the frame to provide course adjustment of the base relative to the frame, and an attachment bracket engaging said frame and adjustably engaging the sliding height bracket to provide fine adjustment.
3. The saw of claim 2 wherein the frame is provided with a protrusion
20 which slidably engages a slot in the sliding height bracket, a releasable locking means being provided to secure the relative position of the protrusion within the slot of the sliding height bracket.
4. The saw of either claim 2 or 3 wherein the adjustable engagement
25 between the sliding height bracket and the attachment bracket is provided by a fine adjustment mechanism.
5. The saw of claim 4 wherein the fine adjustment mechanism includes a locating rod extending through a flange on the attachment bracket and secured
30 at one end to the sliding height bracket, and

a threaded adjustment knob engaging said locating rod abutting, against said flange, the extension of the locating rod through said flange being adjusted by rotation of said knob relative to said locating rod.

- 5 6. The saw of claim 5 wherein the sliding height bracket is provided with an engagement stub or bolt, said engagement stub or bolt being slidably received within a guide in the attachment bracket and securing to one end of the locating rod.
- 10 7. A saw including a frame, a drive means mounted to the frame coupled to a planar saw blade for rotation about a drive axis within a cutting plane and a base mounted to the frame for pivotal movement about a first axis substantially parallel to the cutting plane and a second axis which is generally substantially parallel to the drive axis, the relative pivotal movement of the frame about the
- 15 first pivot axis being determined by a trim adjuster including a disengageable position locator which is operable to provide a plurality of predetermined discrete engaged positions over the range of pivotal movement of the frame relative to the base about the first axis, and a locking means for locking the position of the frame relative to the base.
- 20
8. The saw of claim 7 wherein the disengageable position locator includes a pawl housing and a slotted coverplate, the pawl housing being secured to one of the base or the frame and the slotted cover plate being secured to the other of the base or the frame.
- 25
9. The saw of claim 8 wherein the slotted cover plate is provided with a plurality of notches, corresponding to said plurality of discrete predetermined engaged positions, said pawl housing having a pawl moveable between a disengaged position and an engaged position with said notches.
- 30

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10. The saw of claim 8 wherein the locking means includes a bolt extending through said slotted cover plate and cooperating with a locking device to secure the relative position of the slotted cover plate to the pawl housing.
- 5 11. The saw of claim 8 wherein the pawl housing is secured to the base plate and the slotted cover plate is mounted to a first pivot mounting on said frame.
12. The saw of claim 11 wherein the slotted cover plate is mounted to the first pivot mounting by a fine trim device for limited rotation of the cover plate
10 relative to the first pivot mounting.
13. The saw of claim 12 wherein the fine trim device includes an adjustment lever having a cam received for rotation within an aperture in said cover plate, said cam having an eccentrically mounted stud for attachment to said first pivot
15 mounting, whereby rotation of said lever and cam causes limited rotational displacement of cover plate relative to the first pivot mounting.
14. The saw of any one of claims 7-13 wherein the pivotal movement of the frame about the second pivotal axis is determined by a mounting assembly, the
20 mounting assembly providing a means of course adjustment of the position of the base relative to the frame and a means of fine adjustment of the position of the base relative to the frame.
15. The saw of claim 14 wherein the mounting assembly is pivotally attached
25 to a second pivot mounting on said base to allow pivotal movement of said frame and mounting assembly relative to said base about said second axis.
16. The saw of claim 15 wherein the mounting assembly further includes a
30 locking device for fixing the relative position of the mounting assembly relative to the base plate.

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17. The saw of claim 14 wherein the mounting assembly includes a sliding height bracket and an attachment bracket, the sliding height bracket adjustably engaging the frame to provide course adjustment of the base relative to the frame, and an attachment bracket engaging said frame and adjustably engaging the sliding height bracket to provide fine adjustment.

18. The saw of claim 17 wherein the frame is provided with a protrusion which slidably engages a slot in the sliding height bracket, a releasable locking means being provided to secure the relative position of the protrusion within the slot of the sliding height bracket.

19. The saw of claim 18 wherein the adjustable engagement between the sliding height bracket and the attachment bracket is provided by a fine adjustment mechanism.

20. The saw of claim 19 wherein the fine adjustment mechanism includes a locating rod extending through a flange on the attachment bracket and secured at one end to the sliding height bracket, and
a threaded adjustment knob engaging said locating rod abutting, against said flange, the extension of the locating rod through said flange being adjusted by rotation of said knob relative to said locating rod.

21. The saw of claim 20 wherein the sliding height bracket is provided with an engagement stub or bolt, said engagement stub or bolt being slidably received within a guide in the attachment bracket and securing to one end of the locating rod.

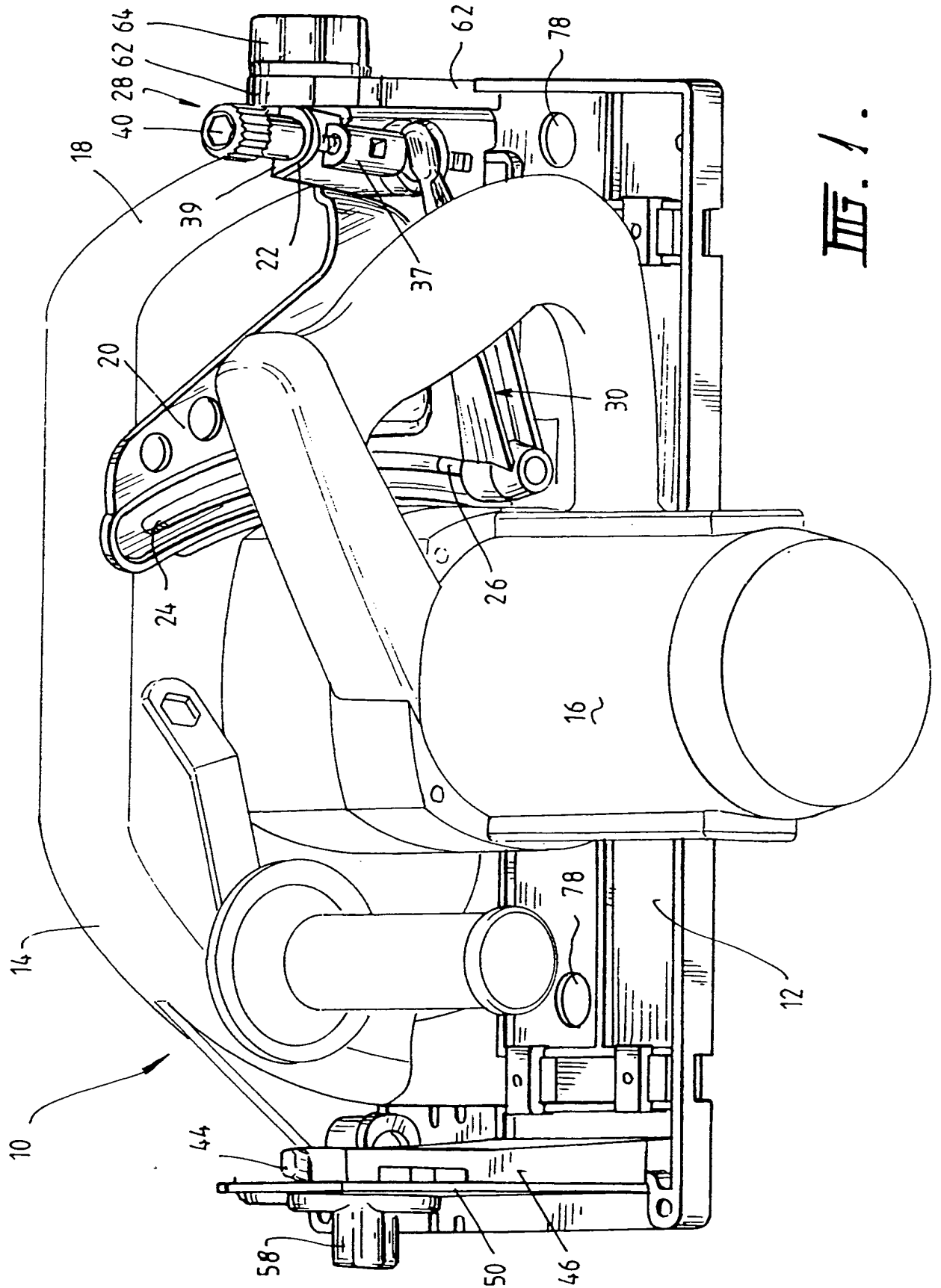
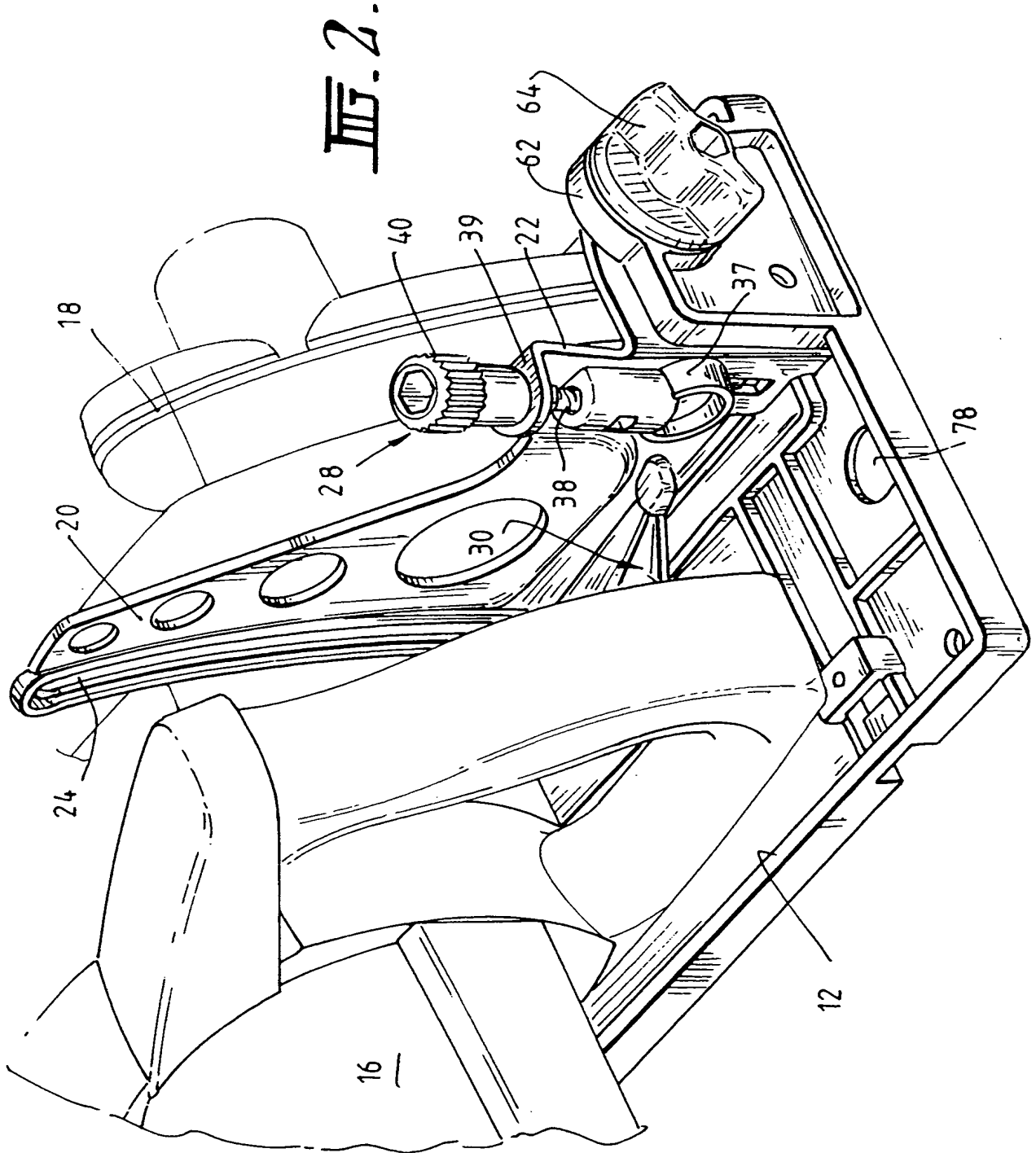
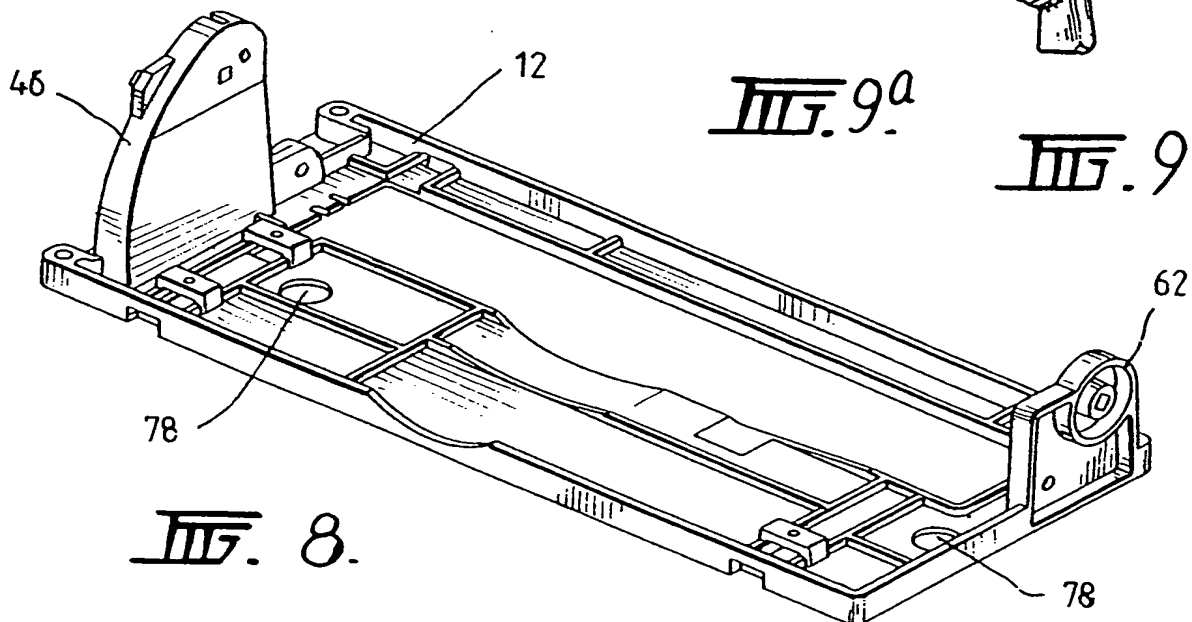
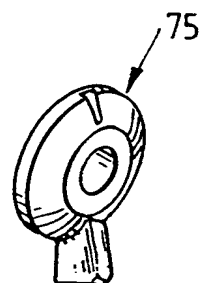
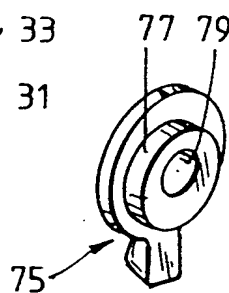
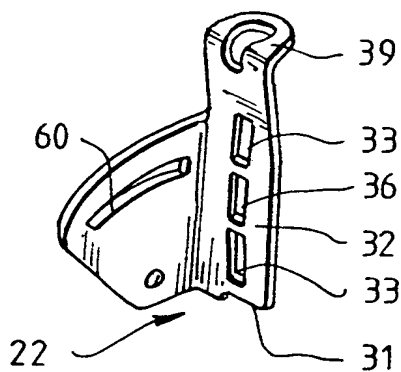
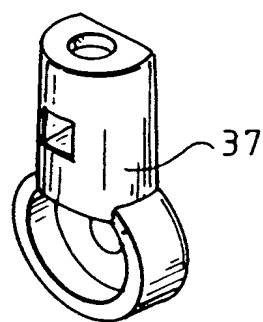
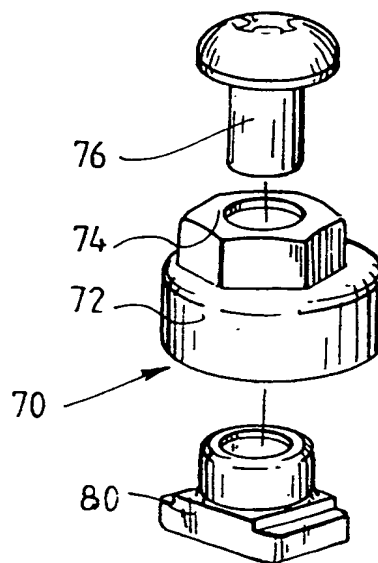
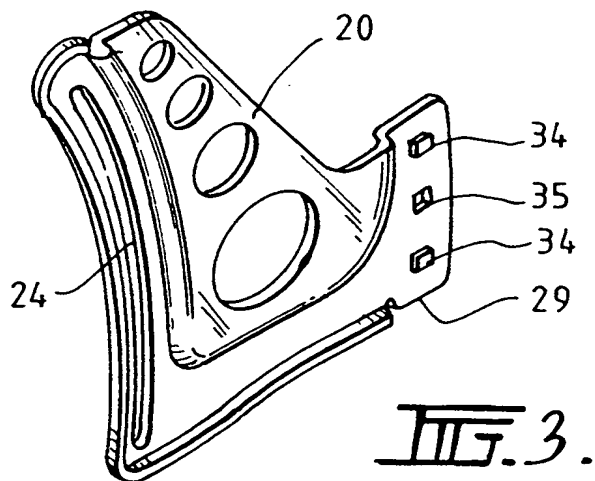
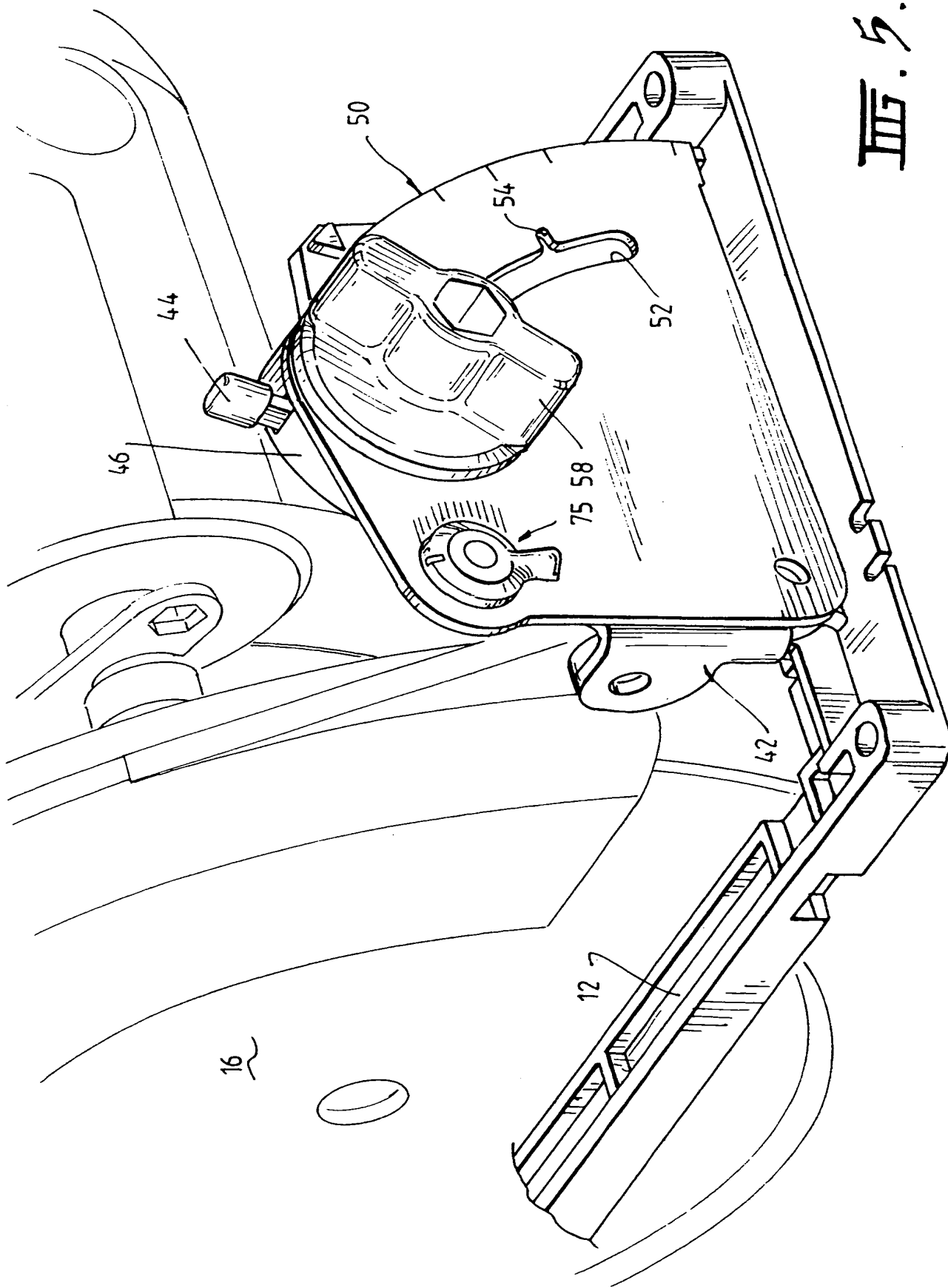


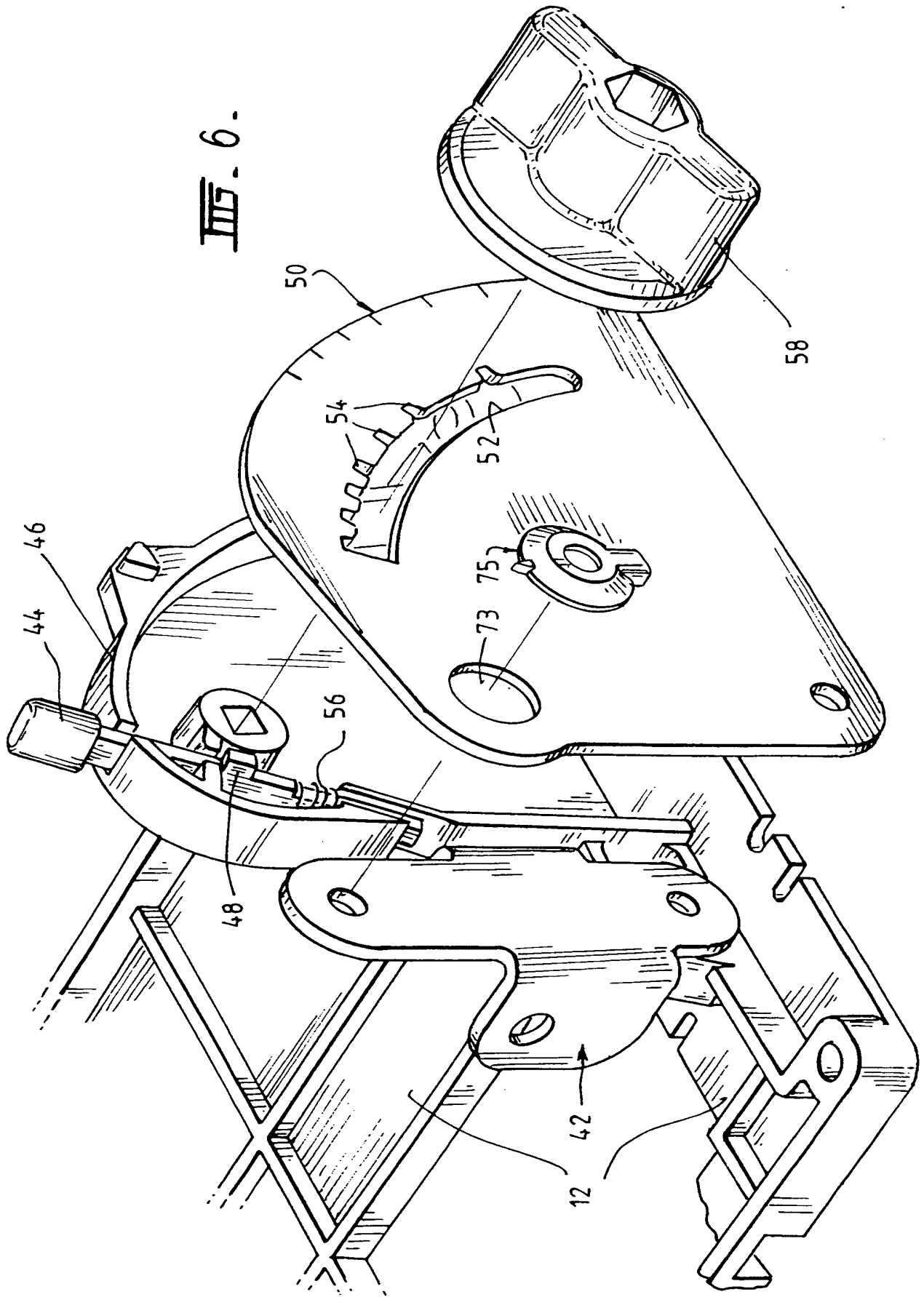
FIG. 1.







III.5.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU00/00122

A. CLASSIFICATION OF SUBJECT MATTERInt. Cl. ⁷: B23D 47/00, B27B 5/24, 5/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
IPC B23D 47/00, B27B 5/24, 5/36Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2302057 A (BLACK & DECKER) 8 January 1997 Abstract	1, 7
A	US 5495784 A (CHEN) 5 March 1996 Abstract and figures 1 and 2	1, 7
A	US 5235752 A (SAUERWEIN et al.) 17 August 1993 Column 3 line 50 - column 4 line 46, figure 2	1, 7
A	US 4982501 A (SAUERWEIN et al.) 8 January 1991 Abstract and figures 1 and 3	1, 7

☐ Further documents are listed in the continuation of Box C
 ☒ See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

10 March 2000

Date of mailing of the international search report

15 MAR 2000

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU00/00122

Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos :
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos :
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos :
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Two different inventions are claimed. The inventions are:

1. A saw including a base, a frame with a saw blade pivotable with respect to the base about an axis parallel to the drive axis and an axis parallel to the cutting plane and a mechanism to adjust the pivotal movement of the saw blade about the axis parallel to the drive axis(Claims 1 – 6).
2. A saw including a base, a frame with a saw blade pivotable with respect to the base about an axis parallel to the drive axis and an axis parallel to the cutting plane and a mechanism to adjust the pivotal movement of the saw blade about the axis parallel the cutting plane (Claims 7 – 13)

These two inventions are not linked by a special technical feature

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU00/00122

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
US	5235752	CA	2112144	EP	605998		
US	4982501	AU	72623/91	JP	5077202	CA	2036910
		EP	445972				

END OF ANNEX

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